

ABSTRACT

In a communication device at a transmitting side, a by-channel pilot generator (7) generates pilot signals by channels which are spread with a code orthogonal between channels. A common pilot generator (10) generates a pilot signal common to multiple channels. Adders (8), (9), (11), and (12) allocate user data, the common pilot signal, and the pilot signals by channels according to a prescribed frame format, thereby generating transmission signals by channels. In a communication device at a receiving side, a time synchronizing unit (25) and a frequency synchronizing unit (26) establish a timing synchronization and a frequency synchronization using the common pilot signal. A by-channel pilot extractor (29) extracts the pilot signals by channels from a reception signal, after the timing synchronization is established.